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cont create a hot plasma at a high temperature and pressure, promote an increase in tube wall temperature, and vaporize the metal halide to emit light.

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8. (Amended) A metal halide lamp, comprising:

an arc tube having a discharge space including substantially no mercury;

92 a pair of electrodes projecting in such a manner as to face each other in the discharge space within the arc tube, a substantially cylindrical arc capable of being generated between ends of the pair of electrodes;

a buffer gas serving as a starter gas and including xenon at a pressure of between approximately 7 to 20 atms at room temperature located in the discharge space;

one of sodium halide, scandium halide, and a compound of sodium halide and scandium halide located in the discharge space; and

a low melting point metal halide with a melting point less than or equal to approximately 400°C located in the discharge space.

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17. (Amended) A metal halide lamp, comprising:

an arc tube having a discharge chamber including substantially no mercury;

93 a pair of electrodes projecting in such a manner as to face each other in the discharge space within the arc tube, with a substantially cylindrical arc capable of being generated between ends of the pair of electrodes;

a buffer gas serving as a starter gas located in the discharge space and including xenon at a pressure of approximately 7 to 20 atms at room temperature;

one of sodium halide, scandium halide and a compound of sodium halide and scandium halide located in the discharge space; and

a low melting point metal halide with a melting point less than or equal to approximately 400°C located in the discharge space, wherein

an internal diameter of the arc tube is within a range of approximately 0.6 mm to 1.7 mm larger than a diameter of the arc between the ends of the electrodes, and the electrodes protrude into the discharge space a length of approximately 1.0 mm to 1.7 mm, a mole content ratio of sodium halide to scandium halide is approximately 1.0 to 15, and a mole content ratio of the low melting point metal halide to the scandium halide is in a range of approximately 0.5 to 3.0.

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